

DEPARTMENT OF ECOLOGY

January 2, 2013

TO: Elizabeth Weldin, Site Manager, SWRO, TCP

FROM: Arthur Buchan, Toxicologist, HQ, TCP

SUBJECT: Proposed Non – Remediated Area of Steilacoom Ridge Development

The purpose of this memorandum is to document an interpretation from the Department of Ecology (Ecology) regarding a proposal to not remediate an area of contamination located at the Steilacoom Ridge Development (Assessor's Parcel No. 21818220000), within the Tacoma Smelter Plume, specifically as it pertains to Ecological Risk Assessment and the Terrestrial Ecological Evaluation (WAC 173-340-7490 through 7494) (Ecology, 2007). This memorandum only pertains to the above – mentioned area regarding atmospheric deposition of the contaminants, arsenic (As) and lead (Pb). For more information, see *Asarco Tacoma Smelter Site, Final Interim Action Plan for the Tacoma Smelter Plume* (Ecology, 2012a).

The proposed non – remediated area needs to be characterized (sampled) per established sampling protocol agreed upon by Ecology. Vertical composite/discrete sampling is a valid Ecological Risk sampling technique, as long as the sample design provides data that are representative of the depth where receptors' (plants, soil biota, and wildlife) exposure to hazardous substances may occur. For more information on composite/discrete sampling, please see Ecology document, *Guidance on Sampling and Data Analysis Methods* (Ecology, 1995) or recent memo (Ecology, 2012b):

<http://www.ecy.wa.gov/programs/tcp/policies/terrestrial/clarification-memos/Composite%20Sampling.pdf>

Note: For purposes of this memorandum, vertical composite/discrete sampling is only a valid sampling technique for ecological risk assessment in the proposed non – remediated area in the above – mentioned site. All other areas must follow sampling guidelines as described in *Asarco Tacoma Smelter Site, Final Interim Action Plan for the Tacoma Smelter Plume* (Ecology, 2012a).

If the results from ecological risk sampling indicate contaminant levels are below the cleanup levels established in the Interim Action Plan, then the requirements of non – remediation have been met. As a result, there should be no further requirements for ecological risk assessment of the proposed non-remediated area(s). If the proposed area of non – remediation exceeds established cleanup levels, an available option is a Net Environmental Benefit Analysis. This is to be used when there is the possibility that the terrestrial ecological evaluation procedures could create an incentive to cause harm through the destruction of habitat.

Net Environmental Benefit Analysis

A Net Environmental Benefit Analysis (NEBA) is the procedure of weighing the advantages of active cleanup (remediation) versus the impact that cleanup might have on potentially valuable ecological receptor habitat (Ecology, 2012c). Terrestrial ecological evaluation procedures should not create an incentive to cause harm through the destruction of habitat. As a result, WAC 173-340-7490 (5): “Additional measures. The department may require additional measures to evaluate potential threats to terrestrial ecological receptors notwithstanding the provisions in this and the following sections, when based upon a site – specific review, the department determines that such measures are necessary to protect the environment.” (Ecology, 2007).

Limitations: As stated in WAC 173-340-7490 (1) (c): “These procedures [Terrestrial Ecological Evaluation] are not intended to be used to evaluate potential threats to ecological receptors in sediments, surface water, or wetlands. Procedures for sediment evaluations are described in WAC 173-340-760, and for surface water evaluations in WAC 173-340-730. Procedures for wetland evaluations shall be determined by the department on a case-by-case basis.” In addition, WAC 173-340 also defines Terrestrial ecological receptors as “plants and animals that live primarily or entirely on land.” (Ecology, 2007). As a result, the intent of this memo is to clarify procedures that would further protect especially valuable habitat that supports terrestrial ecological receptors that would otherwise require remediation to attain cleanup levels. It is not the intent of this memo to delineate between upland, surface water, sediment, and wetland environments.

Prior to performing a NEBA, the proposed non – remediated area needs to be defined as “especially valuable habitat.” (Ecology, 2012c). “Especially valuable habitat” can be designated through the use of one of the below proposed methods:

Method 1: Site can be designated “especially valuable habitat” through several verifications:

- The site is used by a threatened or endangered species protected under the Federal Endangered Species Act, or;
- The site is used by a “priority species” or “species of concern” designated under Title 77 RCW, or;
- The site is used by a plant species classified as “endangered,” “threatened,” or “sensitive” under Title 79 RCW, or;
- Wetlands and Fish and Wildlife habitat conservation areas designated as critical areas under Chapter 36.70A.170 RCW. Other critical areas that might be found on the property, such as recharge areas, frequently flooded areas, geologically hazardous areas, steep slopes, and aquatic areas, are not immediately designated as “especially valuable habitat” unless they meet one of the previous criteria. These other types of critical areas must follow the Method 2 process.

Note: For animals, “used” means that individuals of a species have been observed to live, feed or breed at the site. For plants, “used” means that a plant species grows at the site or has been found growing at the site (Ecology, 2007).

Method 2: Site can be designated “especially valuable habitat” through several verifications:

- An experienced field biologist must visit the site and document that:

- The site can be potentially used by a threatened or endangered species protected under the Federal Endangered Species Act, or;
- The site can be potentially used by a “priority species” or “species of concern” designated under Title 77 RCW, or;
- The site can be potentially used by a plant species classified as “endangered,” “threatened,” or “sensitive” under Title 79 RCW
- Additionally, the field biologist must document types of flora and fauna and signs of excessive uptake of the specific contaminants. This will help establish sustainability and whether or not native species occupy the habitat.
 - Document the species of plant, soil biota, and wildlife found at the specific site
 1. Differentiate between those that are native and those that are invasive
 - Document if native plant life is well-established (i.e. primary or secondary growth)
 - Document if plant life show signs of As or Pb uptake including (but not limited to) signs of:
 1. Wilting
 2. Chlorosis (pale, yellow or white plant tissue)
 3. Browning
 4. Excess mortality
 5. Reduced growth, photosynthesis, mitosis, or water absorption (dehydration)
 - Document any signs of As or Pb uptake in soil biota including (but not limited to):
 1. Limited numbers
 - Document any signs of As or Pb uptake in wildlife including (but not limited to):
 1. Muscular incoordination
 2. Debility
 3. Slowness
 4. Jerkiness
 5. Falling
 6. Hyperactivity
 7. Fluffed feathers
 8. Drooped eyelids
 9. Seizures

If one of the above methods has been met, the Ecology Site Manager (or designee) should then visit the site to make a final determination as to whether or not the proposed non – remediated area appears to be established, sustainable, and native habitat. In granting the request of non – remediation, the Ecology Site Manager (or designee) should consider the following factors prior to making a final decision (Ecology, 2012c):

- The rarity of the habitat for the geographic area in which the site is located.
- The size of the habitat.
- Whether the habitat functions as a wildlife corridor.
- Whether the habitat functions as a refuge or feeding area for migratory species.
- The structural diversity of the habitat.
- Surrounding habitat and land uses.

- Whether the habitat is manmade or natural.
- Whether the cleanup would significantly disturb the ecological functions of the habitat.
- The level of human activity in the area.
- The length of time for recovery of the habitat after cleanup.

Please note, this memorandum only covers WAC 173-340-7490 through 7494 (Ecology, 2007). All other applicable rules and regulations still apply. In addition, sampling procedures can be found at Ecology publication, *Guidance on Sampling and Data Analysis Methods* (Ecology, 1995).

Should you have any questions, please contact me at (360) 407-7146 or Arthur.Buchan@ecy.wa.gov.

REFERENCES CITED:

Washington State Department of Ecology. (1995). *Guidance on Sampling and Data Analysis Methods*. Publication No. 94-49.

Washington State Department of Ecology. (2007). *Model Toxics Control Act Statute and Regulation*. Publication No. 94-06.

Washington State Department of Ecology. (2012a). *Asarco Tacoma Smelter Site. Final Interim Action Plan for the Tacoma Smelter Plume*. Publication No. 12-09-086.

Washington State Department of Ecology. (2012b). Memorandum from Arthur Buchan, Toxicologist, Toxics Cleanup Program to Craig Rankine, Site Manager, Toxics Cleanup Program, re "Use of Composite Samples for Ecological Risk Assessment," November 30, 2012.

Washington State Department of Ecology. (2012c). Draft Technical Document, "Terrestrial Ecological Evaluations under the Model Toxics Control Act." Internal Review. No Publication No.